



Food and Agriculture
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International
Plant Protection
Convention

Establishing the Sterile Insect Technique Methodology for the Management of the False Codling Moth, *Thaumatotibia leucotreta*, And of the Peach Fruit Fly, *Bactrocera zonata* (ISR5022)

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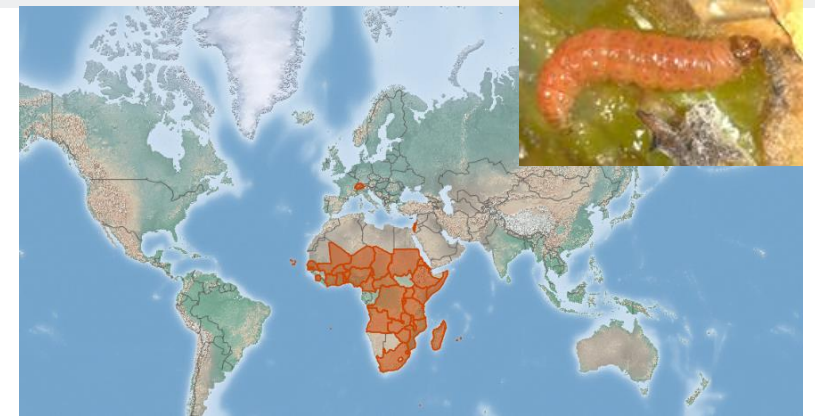


Background

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False Codling Moth (FCM)

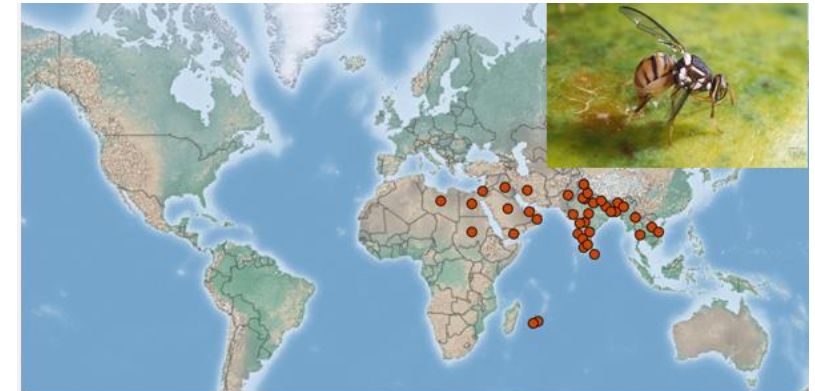
- Invasive quarantine species native to sub-Saharan Africa
- Extremely polyphagous including orange (*Citrus sinensis*)
- Estimated damage is 20% yield loss and increase in insecticide use
- It is a quarantine pests of concern for APPPC, COSAVE, EPPO, NAPPO, OIRSA and other regions in the world



False Codling Moth (*Thaumatotibia leucotreta*)

Peach Fruit Fly (PFF)

- Invasive quarantine species native from South and Southeast Asia
- Main commercial hosts are peach, orange, mango, guava
- Economic impacts may result primarily from yield loss, the loss of export markets and the costly quarantine restrictions that are imposed by importing countries to prevent entry of this pest
- Recommended as an A1 Pest for regulation by EPPO and it is also a quarantine pest for COSAVE, NAPPO, OIRSA and other regions in the world



Peach Fruit Fly (*Bactrocera zonata*)

Scope

Develop capacity in the Member State (Israel) to adopt and implement an IPM-SIT based approach for sustainable control of the false codling moth and further advance, from a previous FAO/IAEA project, on the development of IPM-SIT against the peach fruit fly.

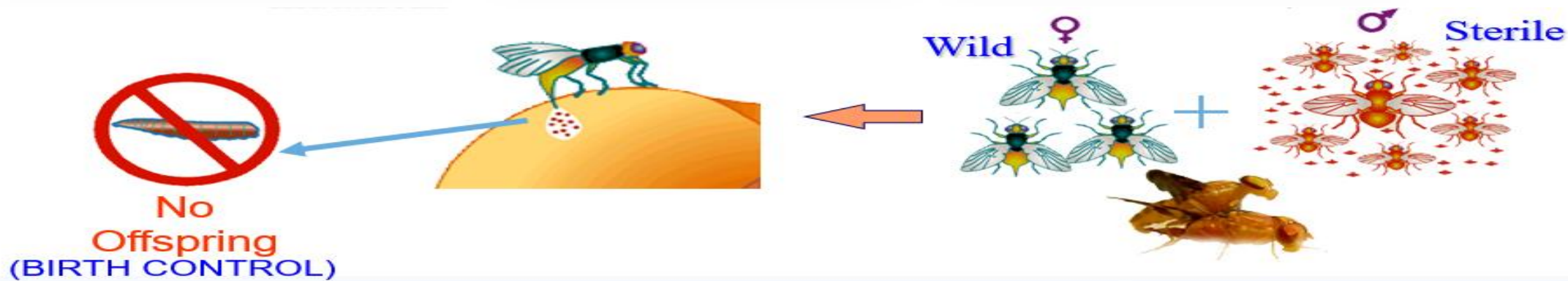
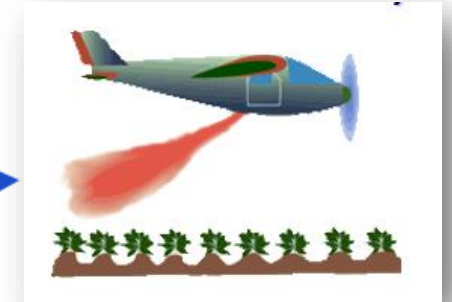
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Sterile Insect Technique (SIT)

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Complex technology but very cost-effective if applied properly as has been shown in many countries around the world and for a number of insect pests.



Relevance to the IPPC

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- ✓ Development of tools for early detection and rapid response to invasive quarantine pests
- ✓ Foster pest prevention rather than establishment and pest management
- ✓ Protect plant resources in Member States
- ✓ Protect human health and the environment



Main expected outputs

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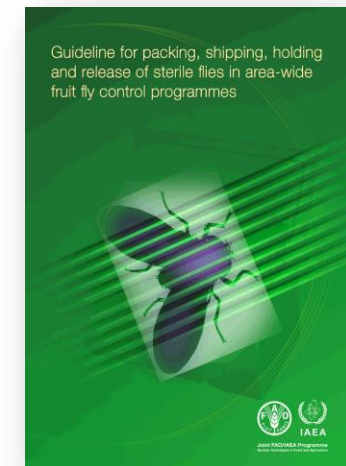
FCM

- ❖ Capacity developed in the Member State (Israel) including expertise, infrastructure and a regulatory framework for the application of an IPM-SIT.
- ❖ Methodologies established in the form of standard operation procedures manuals in order to meet a long term sustainable IPM-SIT application.



PFF

- ❖ IPM-SIT against Peach Fruit Fly validated at pilot level and ready to be moved to an operational scale.



Challenges:

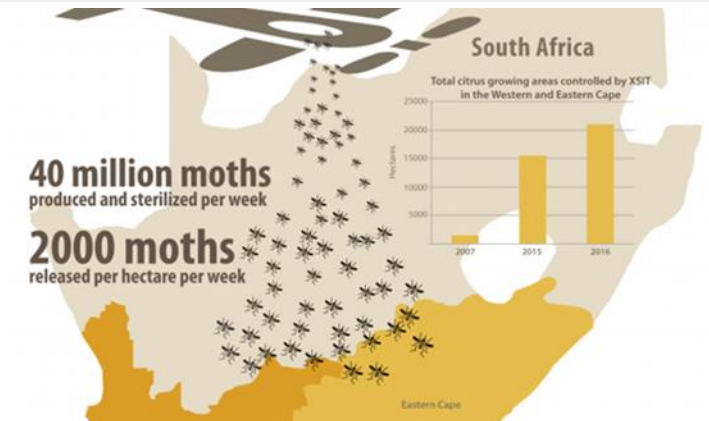
SIT transferred from South Africa to Israel for FCM

Implementation Strategy (2022-2024)

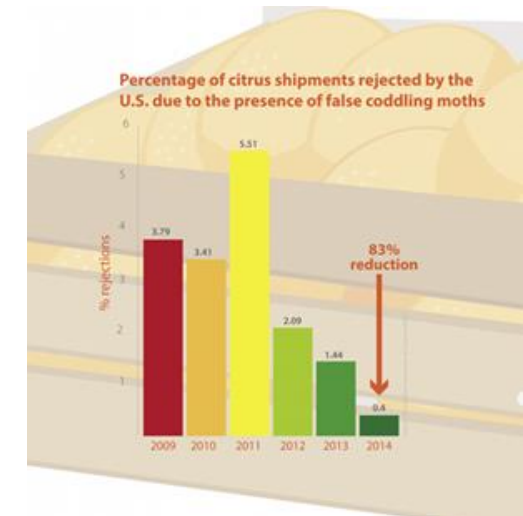
- ❖ Technical Cooperation: Between IAEA and Israel (NPPO-PPIS), and stakeholders including BioBee Ltd; the Plant Production and Marketing Board (PPMB)) and the X-SIT programme run by a citrus association in South Africa
- ❖ Technology transfer: SIT transferred from South Africa to Israel for FCM control under the framework of the IAEA technical cooperation project
- ❖ Strengthening the FCM surveillance system
- ❖ Evaluation and adaptation of the existing infrastructure in Israel for the rearing, irradiation and release of FCM (BIOBEE)
- ❖ Establishing mass production, irradiation and sterile moth release protocols for FCM
- ❖ Addressing regulatory issues that may arise in SIT application, including imports of sterile moths, irradiation facility operation, measures for implementation by growers such as monitoring and sanitation (PPIS)
- ❖ Training of managerial and technical staff in all aspects of the FCM SIT
- ❖ Public information campaign (outreach)

Impact Programme South Africa: Moth catches reduced by 99%, fruit infestation by 96% and export rejections by 89% since the inception of IPM including sanitation, mating disruption and SIT.

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SIT applied against false codling moth in South Africa



Rejections of citrus shipments due to the presence of False Codling Moth

Success: Peach Fruit Fly (PFF) Control Enhanced

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❖ Pre-harvest component

- Improvement of surveillance capabilities allowing maintaining the current boundaries of the infested area
- Surveillance developed as a decision support tool informing the NPPO early-on of any shifts in the PFF population and distribution
- Progress made in the potential use of SIT
 - + Artificial rearing and irradiation protocols available
 - + Small scale mass rearing facility established
 - + PFF colony under quarantine conditions being maintained
 - + Regular supply of flies for lab and field trials

❖ Post-harvest component

- Cold treatment schedule through lab bioassays determined
- Feasibility assessment completed on the use of irradiation as a postharvest against the PFF

Challenges:

- ❖ Built on achievements of the previous national project, ISR5021
- ❖ Validate SIT at a pilot level to move into an applicable operational IPM programme
- ❖ Industrial-scale cold postharvest treatment against the PFF and move forward in the use of irradiation as a disinfestation treatment.



Steiner trap against PFF.



Peach fruit fly colonies and climatic chamber used for cold treatment evaluations.



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Thank you

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